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AUTHOR Chomsky, Carol
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ABSTRACT

This paper discusses the nature of language knowledge and the manner in which children come to acquire this knowledge. Among the topics discussed are language production and the ability to understand sentences never heard before, sentence formation, children's construction of rules, children's language creativity, language acquisition and age, children's linguistic progress, reading exposure, children's early writing, and children and spelling. Following the discussion of these topics, it is suggested that children be introduced to the written word through writing other than reading. If children spell creatively for a period of time before being expected to read, they gain active experience in the principles of alphabetic representation. Written language from the start is systematic and accessible to children, and they can take an active role in dealing with it. Teachers should direct their efforts toward providing an environment in which children's natural language creativity can flourish. (TS)

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Creativity and Innovation in Child Language

Carol Chomsky
Harvard Graduate School of Education

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There are two themes that I would like to develop with you tonight. They both relate to the language user's talent for linguistic innovation. One is the nature of language knowledge, and the manner in which children come to acquire this knowledge. The creative aspect of language learning and language use has been emphasized in much of recent psycholinguistic work, and I will consider some educational implications of this work, suggested by the recognition of the child as innovator in the task of language acquisition. The second topic that I will discuss has to do with encouraging children to use their creative tendencies when they come to the second large linguistic task of their young lives, learning to read. Some rather intriguing recent evidence indicates that there are children who write before they read, who compose words and messages in their own invented spellings as a first step in dealing with the printed word. This ability, which at first appears rather remarkable, is, I think, quite a natural ability when we take a closer look. Tonight I'd like to explore the potential of this idea -- of encouraging children to write before they read, in keeping with their predisposition for linguistic creativity.

One of the more interesting aspects of language that is emphasized in current linguistic work is the fact that speakers of a language produce and understand sentences they have never heard before. The sentence you are listening to right now, or the opening sentence of any article in this morning's New York Times is one that you may never have heard, but you are able to recognize it as a grammatical sentence of English. In fact, for any sequence of words that one might care to devise, speakers can recognize whether or not the sequence constitutes a sentence in their language. This creative aspect of language use rests on the fact that what we have learned and know are not the actual sentences of our language, but rather the system of rules for making sentences. Clearly when we speak we do not draw from a memorized list of all possible sentences in English. The major portion

of language usage consists of sentences that have never been uttered before. We make them up as we go along. We innovate, according to rules for sentence formation that we hold in common with other speakers of the language.

Our knowledge of these rules is of course implicit. We are not aware of them, and no one has taught them to us. Yet we speak and understand in accordance with them, and they account for our ability to interpret and produce novel utterances.

Some examples of the kinds of rules that we apply in interpreting sentences will help to illustrate the automatic nature of these rules. Much of the time they are extremely subtle and complex. For example, in order to understand a sentence, a listener must often supply information that is missing from the sentence. In the sentence Mary wants to sing, there is no subject expressed for the verb sing, but clearly we know that the implied subject is Mary. Similarly, in Mary wants John to sing, we understand John to be the implied subject of sing. Although there are now two nouns in the sentence, Mary and John, both able to function semantically as subject of sing, we have no trouble identifying John as the intended subject. This is so obvious as to seem not even worthy of comment. But on further consideration, it becomes evident that in order to perform this seemingly simple operation we must know very specifically where to look for the intended subject. For although the above examples might suggest that we look to the noun most closely preceding the verb in question, this technique will not always work. Consider the sentence John convinced Mary, against the wishes of her mother, to move in with him. Who is to move in? Although Mother is the closest preceding noun, it is Mary who is to move in with John. Or take the two contrasting sentences

John encouraged Mary to play the piano.
John was encouraged by Mary to play the piano.

In the first, Mary is to play, and in the second, John. Although the two nouns

John and Mary occur in the same order in both senterces, the subject of play is understood differently. Clearly sentence structure, and not just the order in which items occur, plays a crucial role in our choice of subjects that have been omitted from a sentence.

The picture, however, is still more complicated. For there are examples of sentences which appear to be identical in structure, which nevertheless require differing interpretations. Consider Cinderella told her sisters to clean her room, and Cinderella promised her sisters to clean her room. Who is to clean the room? In the first sentence, the sisters, and in the second, Cinderella. There are no structural clues here in the form of these sentences to indicate this difference. The distinction depends on the properties of the verbs tell and promise, and we must have learned these special properties in order to interpret these sentences correctly.

Or consider I told him what to eat, and I asked him what to eat. In the first, I told him what he should eat, and in the second, I asked him what I should eat. We assign different subjects to the verb eat in the two cases, although again there is no structural difference apparent in the form of these sentences. It is because we know the properties of the verbs ask and tell that we understand these two sentences differently.

These examples of some of the operations that we perform in understanding sentences help to bring out the intricacies of the grammatical operations themselves, and the entirely automatic way in which they function. We are certainly not aware of applying grammatical rules as we speak and listen to others, but the evidence is there that we do. We don't know the rules in any overt sense, but we do behave in accordance with them. They operate automatically, so to speak, without requiring our attention. Under the normal conditions of language use our attention is on meaning, and we do not attend to the structure of the message.

The interesting question, of course, is how children learn grammatical rules of this sort that adults use so naturally. They can't observe the rules directly. All that the language learner has access to is the speech of others, which results from the rules having been applied. This is to say that what the child has to learn is available only indirectly from experience, and must be constructed in large part by the child himself. He has to learn it on his own. There has been an increasing awareness in recent years of just how much children bring to this task by way of their own mental organization and innate human characteristics. They are not 'taught' language in any formal sense, but acquire it naturally, in the course of maturing and developing in an environment where they are adequately exposed to it. They build grammatical rules from what they hear by a process of active construction. The acquisition of language involves developing the rule system, restructuring it with increased maturity as new evidence is added, and eventually producing an internalized grammar which is in accord with the facts of the language. What the child needs from the environment is the raw material on which to work -- exposure to the language in meaningful situations, useful communication, and attentiveness to the task at hand.

The child's role is an active one, right from the start. His earliest utterances, even at the stage when he begins to put two words together to make sentences, reflect his own organization of the linguistic material available to him from his environment. They are innovative and produced according to rule. The child is not just repeating fragments of sentences he has heard, but is creating his own sentences according to grammatical rules that he continually constructs and revises.

A common sentence among beginning talkers, for example, is <u>all gone juice</u>, <u>all gone milk</u>. These may well be imitations of the mother's speech. But a child at this stage, whose hand had just been washed, commented <u>all gone sticky</u>. And

another child, when the front door of the house was closed, cutting off the view to the out of doors, said all gone outside. These were innovations, not repetitions. At a slightly later stage, English speaking children all tend to construct their first negative sentences in the same way, very different from what they hear around them: no mommy go, no want mitten. The rule for forming negatives appears to be "Add no to the affirmative sentence." And similarly with children's first questions. They all begin by simply placing the question word at the beginning of the sentence, without altering anything else: what he wants? why she's crying? These sentences are interesting because there are no models for them in adult speech. They can only be interpreted as inventions which are a consequence of a child's own grammar.

At about age 3, we easily observe the misuse of past tense forms. Allison drinked it, but she hated it, but she drinked it anyway.* And a 3 year old girl asked, on discovering a dead fly in a flower pot, "Mommy, what's that?" Her mother replied, "That's a dead fly, honey." To which the child responded, "Who deaded it?"* Or the 3 1/2 year old boy who described a nursery school episode of building a large block structure and then having to put the blocks away: First we builded a boat and then we unbuilded it.

The tendency to regularize forms in this way is very strong. Children work on the assumption that language is orderly. Once they construct rules from the evidence in speech that they hear, they proceed to apply the rules as widely as possible. These regularized past tense forms are particularly informative because it turns out that many children first use the correct forms of common irregular verbs: it came off, I went out, it broke. Presumably these are learned as individual vocabulary items. Then when just a few regular past tenses are learned, e.g., walked, helped, suddenly the child begins to say It comed off, I goed out, it breaked. Familiar forms which had been used, practiced and

*Examples from their children's speech provided by Sally Shoemaker and Tim O'Connor.

presumably reinforced for several months are driven out of the child's speech and replaced by forms he has never heard. The psycholinguist Dan Slobin has used the term 'inflectional imperialism' to describe this phenomenon of regular forms driving out irregular forms. It's a good example of a fundamental principle of language development: look for regularities, construct rules, then apply them wherever you can.

An interesting example of an invented plural is another case in point. A child at the two and three word sentence stage picked up one of his pacifiers and started to put it in his mouth. "No," he was told, "that's a dirty pacifier." "Dirty pacifier," he repeated. He picked up another one. Again he was told, "No, that one's dirty too." At this point, a pacifier in each hand, he looked from one to the other. "Two pacifiers," he said. "Two dirties pacifiers." This was nice going. After all, how was he to know that the language he was learning was not going to be one that places plural markers on its adjectives as well as its nouns?

Any parent of a young child can produce many such examples of linguistic inventions day by day. They are charming, of course, but the lesson they contain is a serious one for investigators of child language and for those of us who are involved with the language development of children of school age. It is that the essence of language learning and use is creative, not imitative. Language learners must first construct the rules by which they will speak and understand, and then put them to use in producing and understanding novel utterances.

In young children it is often relatively easy to trace aspects of the rules they use and the changes they undergo. The child who formerly said what he wants? now says ~~what's he want?~~ He has learned to add a rule for changing word order when placing a question word at the beginning of the sentence. But what about children of elementary school age? Their speech no longer presents us with easy evidence of rule change. My own work has been involved with the kinds of grammatical rule changes that take place in children from ages 5 to 10. Interestingly enough, the

evidence shows that the natural process of acquisition so readily observable in very young children continues actively into the school years.

Although by age 6 or so the major portion of the task of language acquisition has already been accomplished, there are aspects of the grammar of English that still remain to be acquired. Experiments which deal with children's comprehension of a variety of complex structures, like the promise and ask examples cited earlier, show significant differences between the 6 year old's interpretations and adult interpretations. The gradual reduction of these discrepancies can be traced as children's ability to interpret constructions correctly increases over the next four or five years. The stages found in the intervening years reveal an interesting and orderly picture of gradual acquisition.

The nature of language learning seems to continue much the same after age 6 as during the early years, though naturally at a much slower pace. Although we observe considerable variation in age of acquisition in different children, they all seem to pass through the same stages of development. Both preschool and school age children give evidence of this same phenomenon -- that linguistic development, whether it occurs earlier or later, nevertheless proceeds along similar paths.

As an example, take the sentence cited earlier, I asked him what to eat. Its paraphrase is I asked him what I should eat. This is a difficult sentence for many children, who interpret it to mean I asked him what he was going to eat. They are working on the model of I told him what to eat, which does mean I told him what he should eat. The implied subject of eat is different in the two cases, and the latter sentence is easier because it follows a more general rule of English for finding implied subjects. I asked him what to eat is an unusual case, which children tend to learn late. This particular construction was one of a series of structures which I examined in children from kindergarten through grade 4, and it was one of the hardest. No kindergarten children understood it correctly, in 2nd grade 30%

succeeded with it, and in 4th grade, 70%. By using a variety of such constructions, and examining children's understanding of them through psycholinguistic experimentation, it is possible to analyze children's linguistic progress into distinct stages of development. There is an order in which complex constructions are learned, and a child whose language is examined is found to be at a particular point along the way. The range of ages at each linguistic stage is considerable. In our data, for example, we identified five such stages. Although the general pattern is one of gradual improvement with increase in age, there is a high degree of individual variation, so that some children of 9 1/2 or 10 were two or even three stages behind others of age 7. In our lowest linguistic stage the children were 5 3/4 to 7 years old; in the highest stage, 7 1/2 to 9 1/2; but children from our entire age range, 5 3/4 to 10, make up the middle three stages.

This particular construction, I asked him what to eat, is interesting because it is apparently never learned by some individuals. They continue to interpret it as meaning I asked him what he was going to eat into adulthood. In a subsequent experiment on this same construction, a group of researchers at Tufts University tested children of increasing age through high school, and a group of college students as well. They found that comprehension of this ask construction increased steadily among their subjects up to age 12 or 13, after which no more improvement took place. After age 13, 70% of subjects in each age group succeed with this construction. The percentage does not increase among adults. This is interesting for what it indicates about the timing of language learning. We know, for example, that for foreign language learning, adolescence is something of a cutoff point. Children who move into a new language environment before adolescence are much more likely to acquire the new language with native proficiency than those who enter the new language environment as adults. What the evidence just cited suggests is that this language flexibility may apply to one's native language as well. There may

be complex aspects of one's native language that must be learned before adolescence if they are to be learned at all. If this is indeed the case, the importance of stimulating language development during the early school years takes on an added dimension.

The important question, of course, is what in children's background and environment is relevant to their rate of language development? In the experiment mentioned above, we observed considerable variation in rate of linguistic progress. These children were from an elementary school in a suburb of Boston. The school is primarily middle-class, but the children range in socioeconomic background from working class to professional and academic families. In line with the view of language acquisition as a process of developing a rule system based on evidence from the environment, I was interested in the extent of these children's exposure to language. In particular I was curious about their exposure to the written language through reading or listening to books read aloud.

From what we know of the importance of language exposure, it would seem likely for children's independent reading (and listening) to have an impact on their language development. The written language, after all, is potentially of a more complex nature than speech, both in vocabulary and syntax. The child who reads or listens to a variety of rich and complex materials benefits from a range of linguistic inputs that is unavailable to the non-literary child. One might expect this exposure to contribute to increased knowledge of the language, and in fact the evidence does point in this direction. The experimental results contain some rather intriguing indications that exposure to the more complex language available from reading does go hand in hand with a more mature grasp of the grammar of English.

Many aspects of reading exposure were considered. as I tried to get an inside look at the private reading life of this group of children. I wanted to know what books are read to them, what they read on their own, how much time they spend reading or listening to books read aloud, what they remember from past reading experience.

What I found was that many different measures of reading exposure correlated positively with linguistic stage. Very simply, the children who were more advanced linguistically were the ones who read more widely or had more books read to them.

There are two specific points that I would like to bring out here. One is procedural, the other of educational relevance. With regard to procedure, a great deal of work went into examining the children's reading: half-hour interviews with parents and children; records kept by the children for a week's time of everything they read or heard read aloud; having the children check off on a master book list of some 400 titles those books they were familiar with,and so on.

When all was said and done, there was one simple measure among the many that I used that parallelled all the far more complicated measures very closely, and in a way told the whole story. I pass it on because it was so simple and direct. This was Charlotte Huck's Taking Inventory of Children's Literary Background. This multiple choice quiz which tests a child's knowledge of the content of 60 widely read books, poems and stories was one of the best measures of all in its correlations with all of our other reading measures, and also in its correlation with linguistic stage. The higher the Huck score, the higher in general is the child's linguistic stage in our data. It was an easy and very useful survey tool.

As to educational relevance, results such as these do suggest a role that the school might effectively play in fostering language development, namely reading aloud to children, and encouraging them to read freely on their own. The value of this activity was brought out by a particular finding in our data. In general we found, as in many studies of language development, that the correlation between socioeconomic status (SES) and linguistic stage was high, ie that children from higher income families with more highly educated parents were more advanced linguistically. However, taking the reading measures into account as well led to a very interesting observation. It turned out that the reading measures were very closely

tied to SES among our younger children, and less closely tied among the older children. By 4th grade the reading measures were somewhat independent of SES, and at this age it was the reading measures, rather than SES, to which linguistic stage was related. The implication is that family background is more of a factor when the child is younger, and that as he matures his own activities begin to make more of a difference. For our 4th graders of the same age, IQ and SES, those in higher linguistic stages were the ones who read more widely. This presents a serious challenge to the schools, for it suggests that once a child can read, he's on his own. His linguistic progress from this point on may well reflect what he does with his time.

This observation fits with what we know in terms of language acquisition. Children of elementary school age are still actively learning their native language, and still quite able to do so by methods of their own. What they need is to be exposed to a rich variety of language inputs in interesting, stimulating situations. Children who read widely on their own supply themselves with a broad range of complex language inputs, and our experimental results suggest that this is beneficial in terms of language development. Why shouldn't the schools play a role in fostering this kind of exposure?

It would seem beneficial to read to children all through elementary school, and to encourage them to read books as complicated as they are willing to tackle. Controlled texts and carefully graded materials would seem less to the point than a varied sampling from children's literature. It doesn't matter if they miss some of what is in the book. That is how we all read, after -- slowing down here, skipping there, picking and choosing as we go along. Why shouldn't children be expected to do the same? In this way they could derive what is accessible to them from a wide range of inputs, and put it to use in their own way. This approach would seem to be more closely in accord with the nature of language acquisition as

xx we are coming to understand it.

I have met teachers and reading specialists who prefer to confine children's reading, in school or for school, to books that they themselves have read, or for which a set of prepared questions exists which deal with the content of the book. When this approach is challenged, their response is "But otherwise how can I be sure he actually read the book?" You can't, of course, and I suggest that it doesn't matter. Children needn't be held responsible for so much of their reading, but could benefit from being expected to read independently and for pleasure, wherever their interests take them.

In the long run what the child needs to learn to do,if he is to grow up into a reading adult, is to read for his own purposes. Whether it be for pleasure, or to find out about something, or for whatever reason, it has to be out of internal motivation and not because someone else requires it of him. The sooner he is permitted to acknowledge the private nature of reading, to develop personal tastes and judgments, and to expect his own interests to direct his reading activity, the better.

To turn to the topic of children's early writing, there has been some extremely interesting work done describing children of 5 and 6 years old who do not yet read, but who are able to compose words and messages on their own, in their own invented spellings. Charles Read has reported in detail on the writing produced by some 20 children at home before they entered school. I'd like to consider the relation of this type of early writing to beginning reading, and suggest that in children's development the ability to write actually precedes the ability to read.

Many children of 5 and 6 who do not yet read, but who know the letters of the alphabet and their sounds, are quite capable of composing words, creating their own spellings as they go along. They use the letters of the alphabet according

to their names, or their sounds if they know them, and represent words as they hear them, carrying out a splendid phonetic analysis. The created spellings that they produce, though a far cry from standard spelling, are quite systematic and surprisingly uniform across children. This ability of children to invent spellings and write before they can read and as they begin to read has so far gone largely unrecognized and untapped in the classroom. I would like to recommend that it be encouraged in school as a pre-reading activity, for the value of the activity in itself, and as an excellent personalized introduction to the written word.

What is most interesting is that children appear capable of inventing spellings well before they are ready to read. Indeed the spelling activity precedes reading by its very nature. It's a more concrete task. It requires translating from pronunciation to print when the word is already known. Reading is more abstract, in that it requires, as part of translating from print to pronunciation, identifying the word. This added component of reading, identifying the word, is out of reach of many children who are able to spell, sometimes for months, before they move on to reading.

The inventive speller composes words according to their sounds, figuring out for himself what comes first, next and so on. He does this for his own purposes as a means of self-expression. In this the spelling appears to share some aspects of the activity of drawing a picture. The child who draws a person, for example, is not trying to match an arbitrary pattern, or to represent what someone else will deem correct or accurate. He works from his own perceptions and chooses to put down on paper those features which in some sense strike him as worthy of representation. As he matures he represents increasingly many of these features and may organize them somewhat differently.

This is much the way it is with the spellings. The child spells independently, making his own decisions. He has no preconceptions of how the word ought to be spelled, nor any expectation that there is a 'right' or a 'wrong' way to do it. He spells creatively, according to some combination of what he perceives and what he considers worthy of representation. He progresses through several stages, his early productions differing in a number of respects from later ones.

Once children get started creating their own spellings, they can go on to write any message at all. For it is not that they know the spelling of certain words. Rather they possess the means to write any and all words. Very often, particularly at the start, they cannot read back what they have written, nor are they interested in doing so. Recognition of words comes later. For now they are concerned with production.

That the ability to write precedes the ability to read is not a new idea. Montessori found this order of acquisition natural for very young children, and taught reading through word composition. Her pupils were encouraged to read their productions immediately, and learned to do so. Teachers that I have been working with have found kindergarten children much less interested in reading back what they have written than first graders, who by and large show more competence in reading their own productions.

Most interesting from a linguistic point of view is that the children spell not purely phonetically, but with evidence of abstractions in their linguistic judgments. From these abstractions a great deal can be learned about the children's developing phonological systems. Furthermore, and even more striking, different children independently arrive at the same spelling systems. Features in one child's writing that may appear to be idiosyncratic, turn out on comparison to be common to all the children. Working with an inadequate number of symbols, 26 letters to represent all the sounds of English, the children all work out their solutions to this dilemma in much the same way. It seems that the child who spends time and

effort figuring out his own spellings is not only having fun and being creative. He's getting valuable practice in phonetics, in dealing with phonological abstractions, and in the principles of alphabetic writing. This serves him extremely well later when he moves on to reading.

Children in whom this ability has a chance to develop often go on to produce a great deal of writing. Depending on age and inclination, they may vary in their productions from a few sentences to many stories to whole books. The quality of the writing, the spontaneity, and the enthusiasm that children show all attest to the value of free writing for 5 and 6 year olds.

But what of reading conventional spelling for the child who has been accustomed to writing words his own way? Interestingly enough, it appears that conflicts do not arise. In fact, learning to read seems to be considerably facilitated for the inventive speller.. These children bring to reading the same assumptions that they have learned to apply to writing, namely an assurance that it is something you work out for yourself and a confidence to go ahead.

Typically the speller reaches a point where he begins to ask about words that he sees around him. Either he attempts to pronounce them, reading them off phonetically in order to identify them, or he asks what they say. When this time comes, such a child seems suddenly to notice all the print in the world around him -- street signs, food labels, newspaper headlines, printing on cartons, books, billboards, everything. He tries to read everything, already having a good foundation in translating from pronunciation to print. If help is provided when he asks for it, he makes out wonderfully well. It is a tremendously exciting time for him.

I think that what helps the child most of all when he starts to read is his heightened activity level. Learning to read, or at first to identify printed

words, surely involves forming hypotheses about the relations, both direct and indirect, of spelling to pronunciation, changing these hypotheses as new evidence is added, and eventually arriving at a system of interpretation that is in accord with the facts. This hypothesis construction is an active process, able to take the child far beyond the 'rules' that can be offerred him by the best of patterned, programmed or linguistic approaches. The more the child is prepared to do for himself, the better off he is.

My suggestion, then, with only this brief and inadequate introduction, is that children be introduced to the written word through writing rather than reading. If the child spells creatively for a period of time before being expected to read, he gains active experience in the principles of alphabetic representation. In the words of Paulo Freire, he 'assumes from the beginning the role of creative subject.' His view of the written word is of something that belongs to him, a means of expressing what he perceives. Written language from the start is systematic and accessible to him, and he expects to take an active role in dealing with it. When he starts to read, this background and viewpoint very much affect the nature of the task.

Piaget has said 'Children have real understanding only of that which they invent themselves, and each time we try to teach them something too quickly, we keep them from reinventing it themselves.' This insight has an important message for learning to read. For once you have invented your own spelling system, dealing with the conventional system comes easy. You've got the principle and you've already done a good bit of the intellectual work.

Creativity, then, is the order of the day in children's handling of language. Their talent for innovation is a basic one. Our best efforts in teaching might well be directed toward providing a fertile environment in which this natural capacity can flourish.